ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23
PubMed - National Library of Medicine - ID: 101731606
SJIF Impact Factor: 4.956

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 3, Issue –4, August - 2018, Page No. : 198 - 205

A Study on Matrix Rhythm Therapy Versus Combination of Myofascial Release And Kinesio Taping on Upper Trapezius Trigger Points

Marika Mattos[*1.], Dr. Tushar J. Palekar[2.], Dr. Meenakshi Pandit[3.], Dr. Gaurang Baxi[4.], Dr. Soumik Basu[5.]

[1]Intern, Dr. D. Y. Patil College of Physiotherapy, Pune

[2]Principal, Dr. D. Y. Patil College of Physiotherapy, Pune

[3]MaRhyThe® Instructor

[4]Associate Professor, Dr. D. Y. Patil College of Physiotherapy, Pune

[5]Associate Professor, Dr. D. Y. Patil College of Physiotherapy, Pune

Corresponding Author: Marika Mattos, Intern, Physiotherapy Department, Dr. D. Y. Patil College of Physiotherapy, Pune

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Myofascial pain is defined as pain which comes from MTrPs in muscle that are considered as hyperirritable spot located within a taut band of skeletal muscle. They lead to a decreasing of the muscle strength and its flexibility, limiting the range of movement in the joints. Matrix Rhythm Therapy (MaRhyThe®) works on normalizing the oscillating frequency of the cells (8-12Hz). Myofascial release (MFR) focuses on soft tissue that is tight or in spasm and by releasing the spasm or adhesions in turn reduce pain. Kinesio taping works by increasing local circulation. The objectives of the study were 1.To find out the effect of MaRhyThe® 2. To find out the effect of MFR and K- Taping. 3. To compare the effects of MaRhyThe® and MFR and Kinesio- taping on upper trapezius trigger points. 30 subjects were randomly selected on the basis of the inclusion criteria, they will be randomly divided into two groups first (Group A) those who will be receiving MaRhyThe® for 20 min point for 3 alternate days and second those who will be treated with MFR and Kinesio taping (Group B) for 20 min point for 3 alternate days where the tape was left on for 48 hrs. Patients were assessed pre and post treatment on the basis of VAS and cervical range of motion. Both groups showed significant and equal improvement in decreasing pain and increasing range of motion. Clinically MaRhyThe® showed better results.

Keywords: Trigger points, MaRhyThe®, Myofascial Release, Kinesio taping

Introduction

The emotional and tissue stress are generally believed as the negative phenomenon. Due to the presence there can be distinguished the acute and chronic stress[1].Musculoskeletal pain is a major cause of morbidity in today's societies. About one-third of the patients with musculoskeletal pain meet the diagnostic criteria for myofascial pain syndrome[4].It happens that acute stress has the positive effect for mobilization, stimulates the action and allows you to cope with different situations[1]. Myofascial pain syndrome (MPS) is a musculoskeletal

disorder that can be acute or chronic. It is precisely defined and its consequences in terms of dysfunction, disability, and financial loss are great[8]. About one-third of the patients with musculoskeletal pain meet the diagnostic criteria for myofascial pain syndrome.[4]There is growing evidence that most of our common aches and pains and many other puzzling physical complaints- are actually caused by 'trigger points' or small contraction knots, in the muscles of the body.[10] Myofascial pain syndrome is defined as pain of muscular origin that originates in a painful site in muscle. This site is characterized by the myofascial trigger points[8]. It is defined by its physical (motor) characteristics and by its sensory features[8].

Types of myofascial trigger points include: Active, associated, attachment, central, key, latent, primary, and satellite. Any myofascial trigger point is to be distinguished from a cutaneous, ligamentous, periosteal, or any other non-muscular trigger point.

Active Myofascial Trigger Point: A myofascial trigger point that causes a clinical pain complaint. It is always tender, prevents full lengthening of the muscle, weakens the muscle, refers a patient-recognized pain on direct compression, mediates a local twitch response of muscle fibers when adequately stimulated, and, when compressed within the patient's pain tolerance, produces referred motor phenomena and often autonomic phenomena, generally in its pain reference zone, and causes tenderness in the pain reference zone. To be distinguished from a latent myofascial trigger point.[11]

Associated Myofascial Trigger Point: A trigger point in one muscle that occurs concurrently with a trigger point in another muscle. One of these associated trigger points may have induced the other, or both may stem from the same mechanical or neurologic origin.

Attachment Trigger Point: A trigger point at the musculotendinous junction and/or at the osseous attachment of the muscle that identifies the enthesopathy caused by unrelieved tension characteristic of the taut band that is produced by a central trigger point.

Latent Myofascial Trigger Point: A myofascial trigger point that is clinically quiescent with respect to spontaneous pain; it is painful only when palpated. A latent trigger point may have all the other clinical characteristics of an active trigger point and always has a taut band that increases muscle tension and restricts range of motion[11].

Myofascial Pain Syndrome (Myofascial Syndrome): 1.Thesensory, motor, and autonomic symptoms caused by myofascial trigger points. The specific muscle or muscle group that causes the symptoms should be identified.

2. A regional pain syndrome of any soft tissue origin.

3.To avoid confusion, we recommend that when anyone uses the term myofascial pain syndrome, that person should specify which meaning applies— file general or specific definition.

Myofascial Trigger Point (clinical definition of a central trigger point): A hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. The spot is painful on compression and can give rise to characteristic referred pain, referred tenderness, motor dysfunction, and autonomic phenomena[11].

The upper trapezius (UT) muscle was determined to be often affected by MTPs. The common symptoms and pain pattern in participants with MTPs in the UT muscle are taut and painful muscle, tension headache, neck pain, dizziness or vertigo, and limited neck and shoulder range of motion.[4] Trigger points in the trapezius muscle causes pain in the shoulder, occiput, and 5th finger of the upper limb and reduces neck range of motion (ROM).[2]

Each trapezius muscle is flat and triangular, with the base of the triangle situated along the vertebral column (muscle origin) and the apex pointing towards the tip of the shoulder (insertion) [12].

The uppermost part of the trapezius is what gives the back of the neck its shape. The muscle attaches to the base of the skull, the spine, the collar bone, and the shoulder blades. The trapezius supports the weight of the shoulders and must contract strongly to rotate the shoulder blades every time one raises the arm. Another primary function is to hold the shoulder blade solidly in place as a base for the fine operations of the arm and hand.

The upper most part of the trapezius helps support the weight of the head and neck when one bends the head forward or to the side. Faulty posture, such as slumping while seated or habitually carrying the head forward (forward neck posture), places an unnecessary burden on the trapezius muscle, generating trigger points. Shortened pectoral muscles, indicated by a rounded shouldered posture exert a constant pull on the shoulders that the trapezius muscle must constantly counteract.

Another common cause of trapezius trigger points is the emotional tension that keeps the shoulders up (elevated). Any work or physical activity that keeps the shoulders raised puts the muscle at risk of overuse. Trigger points are produced in all parts of the trapezius by a job that requires working with the arms held out in front of the body for extended periods of time. The constant contraction gives them no chance to rest and recover.

Myofascial release is a massage technique that focuses on soft tissue that is tight or in spasm. The source of the tightness can be muscle spasm, soft tissue adhesions, scar tissue, and/or excessive release of acetylcholine.[13]Hou et al. (2002) investigated the immediate effects of MPR on pain reduction, MTrP sensitivity and improvements in cervical range of motion in 48 women with upper trapezius MTrPs. The researchers used two treatment pressure loadings, PPT and a higher loading (an average of the PPT and pain tolerance), and three MPR treatment durations.[14]

Kinesio tape (KT) is a relatively new form of elastic therapeutic tape that was developed by Dr. Kenzo Kase in the 1970's and is used in the treatment of a variety of injuries.[2] It has been hypothesized that KT may exert its effects by (1) increasing local circulation, (2) reducing local edema by decreasing exudative substances,(3) improving circulation of blood by facilitating muscle, (4) providing a positional stimulus to the skin, muscle, or facial structures, and (5) providing proper afferent input to the central nervous system. The KT application techniques include facilitation, inhibition, fascia correction, field correction, functional correction, and mechanic correction techniques. The KT practitioner must decide which muscle group should be treated with which type of technique. The inhibition technique can be used for muscle dysfunction caused by micro trauma or tension[2]. More and more publications suggest that kinesio taping (KT) may be a new treatment option and indicate the possibility of the use of KT in patients with musculoskeletal problems, including MTrPs. Most of the research is related to the use of KT in relieving pain, specifically reducing pain and disability in patients with chronic, nonspecific back pain. It seems that KT can also be used to combat pain in patients with MTrPs[6].

Matrix Rhythm Therapy, is developed by Dr. U G Randoll. According to Dr. U G Randoll's research, the cells in the human body are always oscillating in a frequency ranging between 8-12 Hz provided they are surrounded by healthy extra cellular matrix (ECM). Specially designed and patented resonator of Matrixmobil® produces mechanical- magnetic pulsations. These pulsations gently and harmoniously induces the cells to accept again their own analogue oscillations, resulting in improved supply of oxygenated blood and nutrition through ECM. Elimination of waste products, acids and gases takes place. Improved active cellular transportation results in production of energy in the form

of ATP hence healing and regeneration is set in motion.[9]

Specific effects of MRT:

1. Physiological effects: (a) activation of metabolism (b) acceleration of venous and lymphatic flow (c) activation of the immune system (d) normalization of tension in the musculature (e) neuromuscular activation via the reflex arcs (f) targeted relaxation of local muscular spasms (g) targeted removal of muscular remanence.

2. Chemical effects: (a) Acceleration of the thixotropic reaction from gel to fluid. (b) Reduction of viscosity. (c) Regulation of the interstitial pH value. (d) Increase of tissue temperature to normal temperature.

Physical effects: (a) Reduction of tissue fluid absorption. (b) Targeted strengthening of the muscle's own resonance. (c) Triggering the 'direct piezoelectric effect'. (d) Restoration of the colloid osmotic tissue tonus.

Material and Methodology

The project commenced after the approval from the ethical committee. Subjects were be randomly selected from those who complained of upper back pain or neck pain. A written consent was taken from every participant. They were then assessed on the basis of the inclusion and exclusion criteria. They were then randomly divided into two groups by lottery method. First group (Group A) was treated with matrix rhythm therapy and second group (Group B) were treated with a combination of MFR and Kinesio taping. Patients were assessed on day 1 on basis of VAS and cervical lateral flexion and on day 3 were reassessed post treatment on the same criteria. Patients in group A were treated with MaRhyThe® for 20 mins on the most painful active trigger point for 3 alternate days. The patients were in sitting with head down position with a pillow to rest their heads. In group B the patients were be treated with combination MFR and K- Taping. Myofascial Release was given to the patient within their pain tolerance level, application for K- taping was space technique (start method). Space taping technique was used so that it would cover only the most painful active trigger point and avoid rest of the muscle. The tape was then left on for 48 hours, these subjects were treated for 1 week alternate days.

Outcome Measures

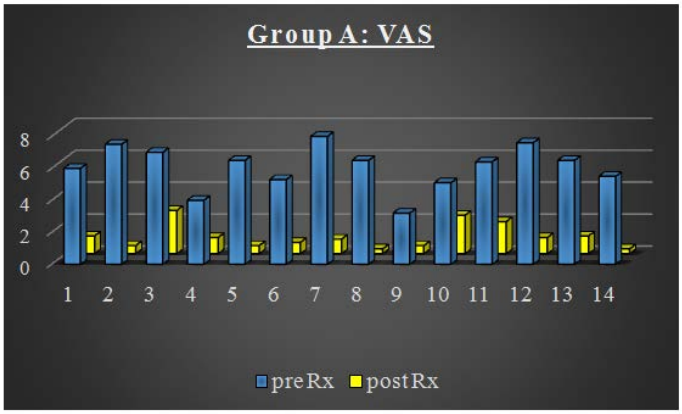
1. Cervical lateral flexion Range of motion.
2. Pain on Visual analogue scale (VAS)

Statistical Analysis

The sample size was determined to be 15 in each group with a total number of 30 participants. Statistical analysis was done by using the Mann-Whitney Rank Sum Test for calculating the p value within the groups. Paired T- test was used to find out the 'p' value of each group and unpaired T-test was used to compare group A with group B. Within group A the difference between day way 1 pretreatment VAS and cervical lateral Flexion ROM was very significant i.e. p value of both VAS and ROM was p (0.000) which indicates highly significant. Also Group B showed significant difference i.e. p (0.000). The pre VAS measures of both the groups were calculated using unpaired T-test which value wasn't significant i.e. p(0.333) . using unpaired t-test the difference between group A and B VAS was measured but the statistical results were not significant (p=0.235) also the difference between the cervical lateral flexion ROM results showed no significant difference (p=0.281 and 0.094) respectively.

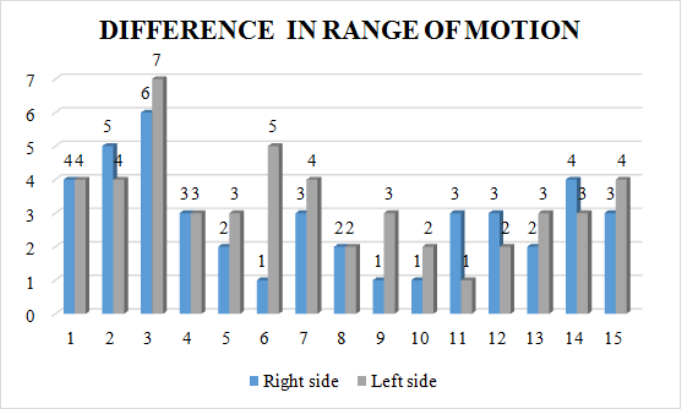
Results

1. Group A- VAS:



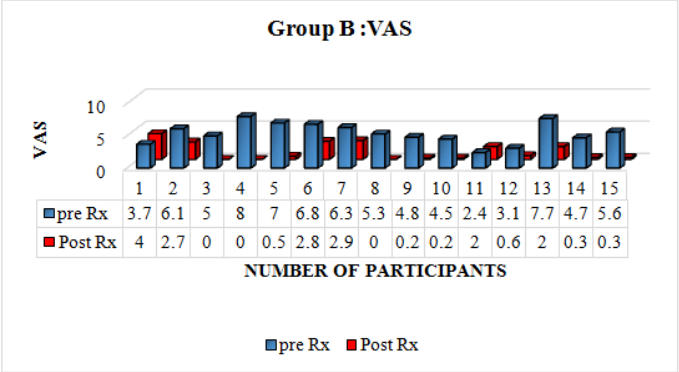
Results: The average difference between day 1 pre-treatment and day 3 post treatment VAS is 4.92.

2. Group A: Cervical Lateral flexion



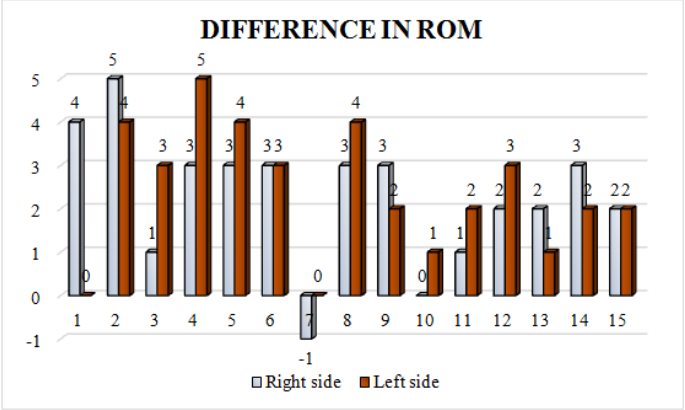
Result: The average difference between day 1 pre-treatment and day 3 post treatment cervical later flexion is 2.87 on the right side and 3.33 on the left.

3. Group B: VAS



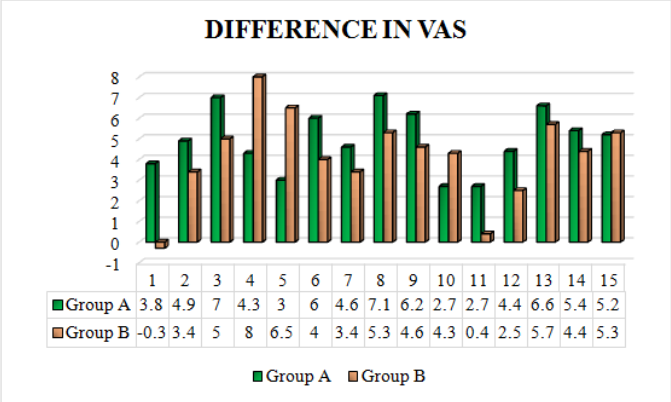
Result: The average difference between day 1 pre-treatment and day 3 post treatment VAS is 4.17.

4. Group B: Cervical Lateral flexion



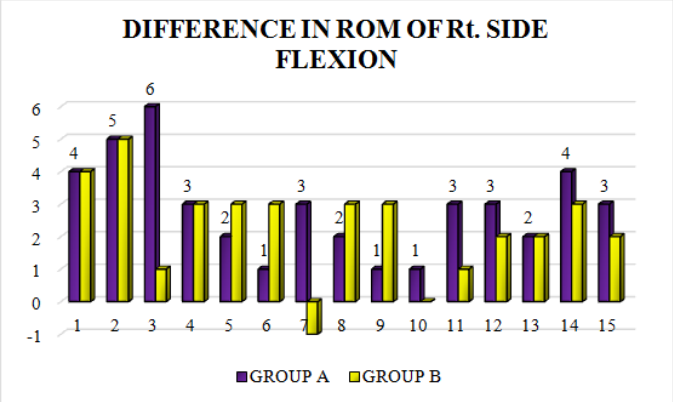
Result: The average difference between day 1 pre-treatment and day 3 post treatment cervical later flexion is 2.27 on the right side and 2.4 on the left.

5. Difference in VAS of GROUP A AND GROUP B



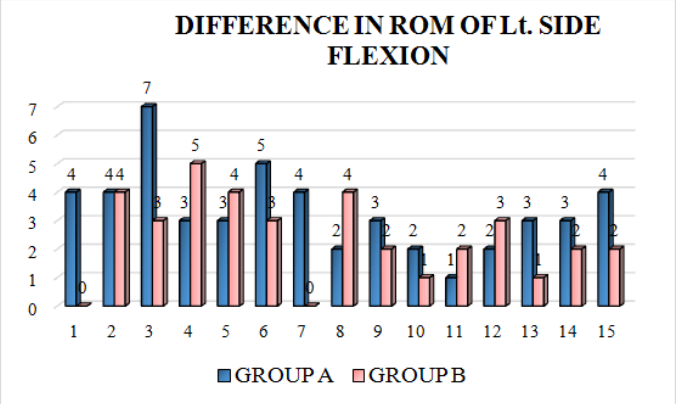
Result: The average of the difference in VAS of group A is 5.00 and that of group B is 4.48.

6. Difference in ROM of Right side of Group A and Group B



Result: The average of the difference of cervical lateral flexion of right side is 2.79 in group A and 2.14 in group B

7. Difference in ROM of Left side of Group A and Group B



Result: The average of the difference in cervical lateral flexion ROM of left side of Group A is 3.29 and that of Group B is 2.57.

Discussion

In a diseased or injured state the muscles have decreased tissue mobility, which leads to increase in contraction of the muscle fibers. This causes a disruption in the oscillating frequency of the cells. The cells in a healthy tissue oscillate with a frequency of 8-12 Hz. In an injured state the cells have less space to oscillate which causes an energy crisis at the cellular level, which means there is less amount of oxygen and nutrients going to the cell. The increase in metabolites causes the pH of the extra cellular matrix to become acidic. Due to the accumulation of metabolite and acidic pH the muscle becomes hard and goes into a state of spasm[19,20].

An active myofascial trigger point is a point in the muscle that produces spontaneous pain either if the muscle or joint is moved or at rest. The pain threshold of active myofascial trigger points is very low.

The main issue in the MTPt treatment is to provide pain relief on the trigger points. The major treatment methods are patient training, elimination of trigger factors, medical treatment, superficial & deep heat applications, electrotherapy, stretching and spray technique, acupuncture, local injections, massage and exercise[1]. This study shows how Matrix rhythm therapy as a new intervention works as a treatment modality for myofascial trigger points.

Matrix Rhythm therapy works by delivering rhythmic oscillating frequency of 8-12Hz.The Matrixmobil® produces mechanical- magnetic pulsations. These pulsations gently and harmoniously induces the cells to accept again their own analogue oscillations, i.e. a frequency ranging between 8-12 Hz [17]. This synchronizes with the internal body rhythm thus improving micro circulation and improving oxygen supply to the cells, also it improves the supply nutrients to the cells by normalizing the pH of the extra cellular matrix making it favorable for the cells to oscillate. This relaxed state of the tissue removes the noxious stimuli from the nerve endings causing pain to decrease [17]. Once the trigger point is treated the muscle is relaxed and when stretched, stretches to its maximum limit,

In this study a combination of Myofascial release and Kinesio taping was used to treat active trigger points. MFR works by breaking down adhesions or spasm in the muscle. This in turn improves the blood supply to the area, washes out waste products and metabolites and improves oxygen to the tissue. It works on the Pain Gait Theory which suggests that the sensory stimuli (pressure) works on the fast conducting nervous system rather than the pain stimuli which are carried by the slow conducting nervous system. This blocks the transmission of pain at the spinal cord level.

One possible analgesic mechanism may be related to the decreased subcutaneous nociceptor pressure in the skin[3].Another possible mechanism of action is by unloading the musculo-fascial structures, activates the damaged muscles, increase the range of motion in the joint, and reduces pain in the soft tissues.

Conclusion

This study concludes that both the groups give significant results by decreasing pain and increasing ROM. But

statistically there is not much significant difference between both the groups. Also, group A i.e. patients treated with Matrix Rhythm Therapy showed better results clinically than that of Group B patients who were treated with a combination of Myofascial Release and Kinesio Taping.

References

1. Pawer Sip, Natalia Sip, Wojciech Manikowski, The Usefullness Of Kinesio Taping to Reduce the activity of myofascial triggerpoints in trapezius muscle.

2. Priya Kannan1 2012, Management of Myofascial Pain of Upper Trapezius: A Three Group Comparison Study Global Journal of Health Science; Vol. 4, No. 5; 2012 ISSN 1916-9736 E-ISSN 1916-9744 Published by Canadian Center of Science and Education.

3. Gülcan Öztürk, MD1)*, Duygu Geler Külcü, MD2), Nilgün Mesci, MD2), Ayşe Duygu Şilte, MD3), Ece Aydog, MD4) Efficacy of kinesio tape application on pain and muscle strength in patients with myofascial pain syndrome: a placebo-controlled trial. J. Phys. Ther. Sci. 28: 1074–1079, 2016.

4. Maryam Ziaeifar, MSc, Amir Massoud Arab, PhD, and Mohammad Reza Nourbakhsh, PhD, OCS, Clinical Effectiveness of Dry Needling Immediately After Application on Myofascial Trigger Point in Upper Trapezius Muscle J Chiropr Med 2016;15:252-258)

5. Çelik D, Türkel N, Atalar AC. Comparison of Matrix Rhythm Therapy and Stretching Exercises on Frozen Shoulder: Randomised Controlled Trial. 2016; 27(3)81-88.

6. Tomasz Halski,1 Kuba Ptaszkowski,2 Lucyna SBupska,3 MaBgorzata Paprocka-Borowicz,3 Robert Dymarek,4 Jakub Taradaj,5 Gabriela BidziNska, Daniel MarczyNski,1 Aleksandra Cynarska,1 and Joanna RosiNczuk4, Short-Term Effects of Kinesio Taping and Cross Taping Application in the Treatment of Latent Upper Trapezius Trigger Points: A Prospective, Single-Blind, Randomized, Sham-Controlled Trial Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine Volume 2015, Article ID 191925,

7. Lynn H. Gerber, MD, Jay Shah, MD, William Rosenberger, PhD, Kathryn Armstrong, DPT, Diego Turo, PhD, Paul Otto, BS, Juliana Heimur, BSNikki Thaker, BS,Siddhartha Sikdar, PhDDry Needling Alters Trigger Points in the Upper Trapezius Muscle and Reduces Pain in Subjects with Chronic Myofascial Pain PM R. 2015 July ; 7(7): 711–718

8. Robert D. Gerwin, MD Classification, Epidemiology, andNatural History of Myofascial Pain Syndrome

9. Matrix Rhythm Therapy- by Dr. U.G Randoll.

10.The trigger point therapy workbook, Clair Davies.

11.Travell and Simons' Myofacial Pain and Dysfunction, The trigger point Manual, Vol 1 upper half of body, 2nd edition.

12.Richard L. Drake, A. Wayne Yogl, Adam W. M. Mitchell; Grey's Anatomy for student's second edition.

13. John Paolini; Review of Myofascial Release as an Effective Massage Therapy Technique.

14.Gary Fryer, B.App.Sc. (Osteo), N.D._, Laura Hodgson, B.Sc. (Clinical Science), M.H.Sc ; The effect of manual pressure release on myofascial trigger points in the upper trapezius muscle. Journal of Bodywork and Movement Therapies (2005) 9, 248–255.

15.Erkan Kaya & Murat Zinnuroglu & Ilknur Tugcu; Kinesio taping compared to physical therapy modalitie for the treatment of shoulder impingement syndrome; Clin Rheumatol (2011) 30:201–207 DOI 10.1007/s10067-010-1475-6.

16.Flávia Emi Akamatsu,1 Bernardo Rodrigues Ayres,2 Samir Omar Saleh,2 Flávio Hojaij,3 Mauro Andrade,1 Wu Tu Hsing,4 and Alfredo Luiz Jacomo1; Trigger Points: An Anatomical Substratum; Hindawi Publishing Corporation

BioMed Research International Volume 2015, Article ID 623287.

17.Ulrich G. Randoll; The Matrix Concept; Medicine of 21st century; Fundamentals of Matrix Rhythm Therapy.

18.Mark D. Thelen, James A. Dauber, Paul D. Stoneman; The Clinical Efficacy Of Kinesio Tape For Shoulder Pain: A Randomized, Double-blinded, Clinical Trial; J Orthop Sports Phys Ther 2008.38:389-395.

19. Jay P. Shah, MD!, Elizabeth A. Gilliams, BA; Uncovering the biochemical milieu of myofascial trigger points using in vivo microdialysis: An application of muscle pain concepts to myofascial pain syndrome.

20. Matrix Rhythm Therapy; Cell Biological Basis.

21.Back Pain – A Major Public Health Problem.

22.David J. Alvarez, Pamela G. Rockwell; trigger points: Diagnosis and Management; Feb 15, 2002;65,4.

23.Elizabeth Demers Lavelle, William Lavelle,Howard S. Smith; Myofascial Trigger Points.

24.Chang-Zern Hong, MD, David G. Simons, MD; Pathophysiologic and Electrophysiologic Mechanisms of Myofascial Trigger Points. 1998 by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation.